

CLAIMS

We claim:

1. A control system for an automatic sprinkler system, the automatic sprinkler system including a first control line and a common line coupled to control a first valve, the control system comprising:

a relay coupled in series with the common line;
a sensing circuit coupled to detect the assertion and deassertion of the first valve; and

a controller coupled to receive a control data, the controller providing a control signal to enable the relay based on the control data,

wherein the relay is turned on or off based on the control data for controlling the on/off duration of the first valve.

2. The control system of claim 1, wherein the control data comprises a data from one of a soil moisture sensor, a temperature sensor, a relative humidity sensor, a light level sensor, a dissolved oxygen sensor.

3. The control system of claim 1, wherein the sensing circuit comprises a voltage measurement circuit coupled to the common line.

4. The control system of claim 3, wherein the voltage measurement circuit comprises a transistor or an operational amplifier.

5. The control system of claim 1, wherein the sensing circuit comprises a voltage measurement circuit coupled to the first control line.

6. The control system of claim 5, wherein the voltage measurement circuit comprises a transistor or an operational amplifier.

7. The control system of claim 1, wherein the sensing circuit comprises a current measurement circuit coupled to the common line.

8. The control system of claim 7, wherein the current measurement circuit comprises an inductively coupled current detector or an in-line resistor.

9. The control system of claim 1, wherein the sensing circuit comprises a current measurement circuit coupled to the first control line.

10. The control system of claim 9, wherein the current measurement circuit comprises an inductively coupled current detector or an in-line resistor.

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11. A control system for an automatic sprinkler system, the automatic sprinkler system including a first control line and a common line coupled to control a first valve and a relay coupled in series with the common line, the control system comprising:

a sensing circuit coupled to detect the assertion and deassertion of the first valve; and

a controller coupled to receive a control data, the controller providing a control signal to enable the relay based on the control data,

wherein the relay is turned on or off based on the control data for controlling the on/off duration of the first value.

12. The control system of claim 11, wherein the control data comprises a data from one of a soil moisture sensor, a temperature sensor, a relative humidity sensor, a light level sensor, a dissolved oxygen sensor.

13. The control system of claim 11, wherein the sensing circuit comprises a voltage measurement circuit coupled to the common line.

14. The control system of claim 11, wherein the sensing circuit comprises a voltage measurement circuit coupled to the first control line.

15. The control system of claim 11, wherein the sensing circuit comprises a current measurement circuit coupled to the common line.

16. The control system of claim 11, wherein the sensing circuit comprises a current measurement circuit coupled to the first control line.

17. A method for controlling an automatic³ sprinkler system comprising:

coupling a relay in series with a common line of the automatic sprinkler system;

monitoring the common line to determine an on-off duration of a first irrigation zone;

receiving control data used to determine a first desired duration of the first irrigation zone, the first

desired duration being equal to or less than the on-off duration of the first irrigation zone;

turning on the relay to enable the first irrigation zone;

turning off the relay in response to the control data to disable the first irrigation zone so that the first irrigation zone is turned on for the first desired duration.

18. The method of claim 17, wherein the first desired duration comprises turning off the first irrigation zone entirely.

19. The method of claim 17, wherein monitoring an on-off duration of a first irrigation zone comprises:

coupling a measurement unit to the common line, the measurement unit being a voltage or current measurement unit.

20. The method of claim 17, wherein monitoring an on-off duration of a first irrigation zone comprises:

coupling a measurement unit to a control line of the automatic sprinkler system, the measurement unit being a voltage or current measurement unit.

21. The method of claim 17, wherein monitoring the common line to determine an on-off duration of a first irrigation zone comprises:

monitoring the common line to determine the programming of the first irrigation zone, the programming including the start time, the duration, and the irrigation frequency of the first irrigation zone.